Victor Harris

CIS 225 Chapter 3 Exercises

Exercise 3.1:

Diagram

Description automatically generated

Object diagrams display an instance of an object, along with its field values, whereas the class diagrams display classes’ relationships.

Exercise 3.2:

When a class is modified to reference different classes as fields, the classes are added to the class diagram.

Exercise 3.3:

When values of an object change, the values are changed in the object diagram.

Exercise 3.4:

Graphical user interface, text

Description automatically generated

Exercise 3.5:

Graphical user interface

Description automatically generated

Exercise 3.6-3.7:

Graphical user interface, text, application

Description automatically generated

Exercise 3.8:



It is a non-static function, so it cannot be referenced as such. getValue() must be called from an instance of an object instead.

Exercise 3.9:

The argument is passed as a parameter.



Exercise 3.10:

It will throw an exception.

Exercise 3.11:

It will only evaluate as true if the ‘replacementValue’ is between 0 and the value of ‘limit’

Exercise 3.12:

It would evaluate as true if either of the above conditions were true.

Exercise 3.13:

‘! false’ and ‘(34 != 33) && ! false’

Exercise 3.14:



3.15:



Exercise 3.16:



Exercise 3.17:

It assumes that the display value is positive but should be configured to only allow 1-2 digit values.

Exercise 3.18:

There is no difference, as long as one of the values returned is a string it will concatenate the other as another string. However, the “” + value syntax is better because it prevents any arithmetic from being applied to the returned value.

Exercise 3.19:

The first one evaluates the int values as ints, resulting in 12cat, whereas the second one does not because the leading string overloads the ‘+’ operator to evaluate the values as strings.

Exercise 3.20:

The modulo evaluates the remainder of 2 numeric values.

Exercise 3.21:

2.

Exercise 3.22:

Text

Description automatically generated



Exercise 3.23:

The possible results are 0-5.

Exercise 3.24:

The possible results are 0–m.

Exercise 3.25:

The increment() method takes the value, increments it by 1, and then returns then modulates the value by the limit, returning the result.

Exercise 3.26:

Table

Description automatically generated OR Background pattern

Description automatically generated

Both work. In context, to me, it seems like a matter of preference. However, I think that the modulo operator should be avoided because it requires more computation than an int evaluation.

Exercise 3.27:

Graphical user interface, text, application

Description automatically generated

During argument-less construction, the ClockDisplay object instantiates 2 NumberDisplays, which have default values of 0.

Exercise 3.28:

Graphical user interface, application, Word

Description automatically generated

Exercise 3.29:

60, or use the setTime() method.

Exercise 3.30:

Diagram

Description automatically generated

Exercise 3.31:

Depending on the arguments (or lack thereof) used during instantiation, the ClockDisplay uses one of two constructors.

Exercise 3.32:

The updateDisplay() method is called in both constructors, but is called inside the setTime() method when arguments are used due to the arguments needing to be used to set the value of the NumberDisplay objects.

Exercise 3.33:

Internal:

print(str, false);

getStatus(1);

External:

p1.print(str, false);

p1.getStatus(1);

Exercise 3.34:

2 Squares, a Circle, and a Triangle

Exercise 3.35:

A picture containing text

Description automatically generated

Exercise 3.36:

No.

Exercise 3.37:

Done using an internal method that accepts an object as an argument of which to change.

Exercise 3.38:

Graphical user interface, diagram

Description automatically generated

Graphical user interface, website

Description automatically generated

Graphical user interface

Description automatically generated

Exercise 3.39:

The first way is simpler, but the second way is more accurate. I lean toward the internal clock being 24 hours, so that there are less ‘magic numbers’ in the code, and functionally it stays the same. That way, the same clock can be used and the display can be configured as a toggle-able display setting.

Exercise 3.40:

Done.

Exercise 3.42:

Graphical user interface, application

Description automatically generated

Exercise 3.44:

Text, chat or text message

Description automatically generated

Exercise 3.45:

Table

Description automatically generated with medium confidence

Exercise 3.46:

Graphical user interface, text, application

Description automatically generated

Exercise 3.47:

Graphical user interface, application

Description automatically generated

Exercise 3.48:

It prints “no new mail” because there is no item to print.

Exercise 3.49:

It prints the fields as follows:

Icon

Description automatically generated with medium confidence

Exercise 3.50:

Graphical user interface, application

Description automatically generated

Exercise 3.51:

Done.